

# PINGUICULA VULGARIS (LENTIBULARIACEAE) AND ITS USES IN NORWAY

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## ABSTRACT

*Pinguicula vulgaris* is a common species in Norway, and well known in folk tradition, not least for its reputed use to curdle milk. Most vernacular names recorded so far, e.g. the widespread *tettegras* or *tettegress* ("rennet grass" or "thickening grass") reflect this use. The fat leaves have also found some uses in folk medicine, e.g. to treat wounds and ringworms, and in folk veterinary medicine, mainly to treat sore teats. There are also a few records of *P. vulgaris* being used as an apotropaic, in magic, and in children's games.

## NORWEGIAN SUMMARY/NORSK SAMMENDRAG

*Pinguicula vulgaris* er vanlig i Norge, og godt kjent i folketradisjonen, ikke minst for sin virkning som tette i melk. De fleste folkelige navn på arten gjenspeiler denne egenskapen, f.eks. det vidt utbredte *tettegras* eller *tettegress*. Bladene har også funnet en viss anvendelse i folkemedisinen, bl.a. til å behandle sår og ringorm, og i folkelig veterinærmedisin, særlig som en kur for såre spener. I noen få tilfeller har *P. vulgaris* også tjent som verneråd, i magi og i barnelek.

## INTRODUCTION

Of the three *Pinguicula* species found in Norway, *P. vulgaris* L. is by far the most widespread. It is found almost throughout the country, and in many different environments, from near sea level to 1570 m a.s.l. in interior southern Norway (Elven 1994:559). *P. alpina* L. is more demanding in terms of habitats, preferring calcareous substrates, and the tiny *P. villosa* L. is restricted to *Sphagnum* hummocks on oligotrophic mires in interior SE Norway and northeastern North Norway (Alm 2000).

All three species share the typical characteristics of the genus *Pinguicula*: a rosette of insect-trapping leaves, secreting a viscous, enzymatic fluid in the presence of small insects or other prey (Casper 1966; Heide 1912; Heslop-Harrison & Heslop-Harrison 1980, 1981; Heslop-Harrison & Knox 1971; Legendre 2000; Warming 1886). *P. vulgaris* belongs to the subgenus *Pinguicula* (Casper 1966; Legendre 2000; cf. Jobson et al. 2003). Christen (1961) studied the species from a pharmacological point of view.

In Scandinavian folk tradition, the leaves of *Pinguicula vulgaris* have been used as *tettegress*, "thickening grass" or "rennet grass," to treat or preserve milk, but how this was done, the characteristics of the product, and the mechanism

behind are disputed (Brøndegaard 1971). The use for dairy products in particular has attracted the attention of numerous authors, e.g. Bergsåker (1982), Brøndegaard (1951, 1971), Evjen (1986), Forsén (1966), Gisler (1749), Gunnerus (1774), Jæger-Lejrvik (1959), Olsen-Sopp (1912), Ränk (1960, 1971), and Weisæth (1990). Høeg (1974) provides much information on the ethnobotany of *P. vulgaris* in Norway. Larsson (1988) carried out an extensive survey of vernacular names in the Nordic countries (see also comments in Hansson 1990). Wix (1995, 1996) provided some notes on traditional uses in Scandinavia, but the language barrier kept him from checking more than a few references.

#### SCOPE AND SOURCES

This paper aims at a comprehensive review of ethnobotanical traditions related to *Pinguicula vulgaris* in Norway. It should be noted that *P. alpina* may also have served as *tettegress*, although all sources that identify the species (and not only the genus) mention only *P. vulgaris* (e.g. Bergsåker 1982; Bjørndal 1949; Brøndegaard 1971; Gunnerus 1774; Høeg 1974; Kirkevoll 1940; Sortdal 1981; Tonning 1773), or note that the plant used had blue flowers (e.g. Klonteig 2000 and seven letters in NFS Manum). Several voucher specimens confirm the identification as *P. vulgaris*, e.g. in the 18th century herbarium of J.E. Gunnerus (in TRH), the 1837-39 herbarium of the linguist Ivar Aasen (Lid 1941), and some vouchers in TROM.

Throughout Norway, *P. vulgaris* or *tettegras/tettegress* is well known in folk tradition. Numerous authors mention its use in milk. Much useful information is found in the vast collection of Norwegian ethnobotanical data assembled by Ove Arbo Høeg in the period 1925 to 1973. However, his large volume (Høeg 1974) makes little use of previous publications.

In addition to data from about seventy publications providing data on Norwegian traditions, some archival data have been incorporated here, mainly from NEG (Norsk etnologisk gransking/Norwegian ethnological survey), NFS (Norsk folkeminnesamling/Norwegian folklore collection) and NOS (Norsk ordbok, seddelarkivet/Norwegian dictionary, card archive). Furthermore, some data have been excerpted from my own ethnobotanical records, mainly from North Norway; these are referred to as EBATA + year and record number. Informants are not identified here; transcripts and some recordings of the original interviews are stored at the Department of Botany, Tromsø Museum (TROM). Unless otherwise stated, all citations have been translated from Norwegian.

#### Vernacular names

No record of any Norse name for *Pinguicula vulgaris* seems to exist; the species is not mentioned by Heizmann (1993). The oldest surviving record, *Marie sko* ("Mary's shoe"), was made at Bergen in 1599, and is found in the diary of Sivert Grubbe (Rørdam 1873). It is an unusual name (see Table 1), although a couple of

other vernacular names referring to the Virgin Mary are known. They are obviously younger than the Christianization of Norway, and must have been coined after AD 1000.

Most Norwegian vernacular names for *Pinguicula vulgaris* reflect its use for making *tettemelk* or "thickened milk" (Fig. 1). *Tette* may be translated as "rennet" (otherwise known as *kjæse* or *løpe* in Norwegian), but the etymological meaning or root is "(make) thick, thigh, compact" (Bjørvand & Lindeman 2000; Torp 1919). A straightforward *tettegras* or *tettegress* ("rennet grass" or "thickening grass"), with some dialectal variations, predominates over large areas (Table 1). Exceptionally, it may also occur in place-names, e.g. *Tettgrasmyra* in Trysil (Kvernbeek 1979:64). *Kjæsegras/gress* ("rennet grass") reflects similar use. Several names on *melk-*, *mjælk-* and *mjælk-* ("milk") refer to the use in dairy products. Other vernacular names refer to the fat and/or slimy appearance of the leaves, e.g. *feitgras*, "fat grass" (Tonning 1773:4), *sleipgras*, "slippery grass" (Høeg 1974:473), *slimgras*, "slime-grass" (Tonning 1773:4), *såpeblomme*, "soap flower" (Halvorsen 1988:188), and the North Sámi *vuodjalasta* ("butter leaf").

*Melkekors* ("milk cross") and other names containing *kors* or *kross* ("cross") obviously refer to the leaf rosette. According to Brøndegaard (1971), it may have reminded people of the cross-shaped lower end of traditional churning sticks, but available records would rather suggest that people thought that the leaf rosette looked like a cross or star.

### ***Pinguicula vulgaris* in pastures**

*Pinguicula vulgaris* is hardly a very frequent pasture-grass for cattle or sheep. In some areas, the plant was considered harmful, by adversely affecting milk. People believed that milk would become thick if the cows consumed *P. vulgaris*, as recorded at Tolga, Trysil and Åsnes in Hedmark (Furuset 1980:126; Reichborn-Kjennerud 1922:87; NFS Manum), Øyer in Oppland (NEG 69:15278), Tjøme in Vestfold (NEG 69:14491), Marnadal in Vest-Agder (NEG 69:15544), Jølster in Sogn og Fjordane (NEG 69:14404), and other stations in southern Norway (Høeg 1974:491). In Gausdal (Oppland), Vestad (1984:60) was told that "the milk could become thick if the cows ate much of this grass." At Trysil in Hedmark, people had noted that milk products could become thick and sour during the summer. In such cases, they believed that the cows had grazed *tettgubbe* ("thickening old man"), according to Furuset (1980:126) either *P. vulgaris* or *Drosera* spp. In Troms, N Norway, people claimed that such effects of *Pinguicula vulgaris* occurred mainly in the autumn (Alm 1983:393).

Some believed *P. vulgaris* to be poisonous, as reflected in the vernacular name *sprenggras* ("burst grass") in Central Norway (Høeg 1974:492). It was said to be harmful for horses, sometimes for cattle or sheep. Strøm (1762:112) noted that "a few" people at Sunnmøre in W Norway considered *P. vulgaris* as harmful to sheep, though he does not specify in which way. A similar belief is reported



FIG. 1. In Norwegian folk tradition, *Pinguicula vulgaris* has been much used to make thickened milk. A commercial product based on a *P. vulgaris* culture, "Tjukkmjøl," made by Rørosmeieriet, is now on sale nationwide. It was also the first food product in Norway with a "controlled origin" label. In accordance with folk tradition, it is more viscous than ordinary (rennet-based) thickened milk. Photograph by Jorunn Marie Rødli and Mari Karlstad.

from Telemark by Wille (1786), but people there also claimed that sheep avoided the plant. Farmers in Valdres, interior SE Norway, believed that it caused a liver disease in sheep (Kirkevoll 1940:174). At Singsås in Sør-Trøndelag, Central Norway, *P. vulgaris* was believed to cause colic in cattle (Høeg 1974:492). In other areas, no such negative effects on grazing animals were known. In his topographical description of Gudbrandsdalen in SE Norway, Hiorthøy (1785) noted that "Whether this herb is harmful to the sheep, as stated by Mr. Strøm, is not known here."

### Folk medicine

In Norwegian folk tradition, *Pinguicula* has found some, but restricted use for medicinal purposes. It was mostly used externally. A decoction of the leaves in water could be used to remove lice from children, and to promote the growth of fair hair: "When the leaves are boiled in water, and the children's heads are washed with it, lice are purged, and the hair grows, and also gets a yellow colour" (Tonning 1773:5). Mohr (1786:152) noted similar use.

In Hallingdal (Buskerud, SE Norway), an ointment was made by boiling



TABLE 1. Alphabetical list of Norwegian vernacular names for *Pinguicula vulgaris* (original spelling, if different from present-day Norwegian, is indicated). Municipalities (communes) are given if possible. "Numedal area" and similar records indicate vernacular names that may derive from several municipalities within the given area.

| Norwegian         | English translation | Area and source  |
|-------------------|---------------------|--|
| Adam og Eva       | Adam and Eve        | Troms: Kvænangen (EBATA 2004:7)  |
| Blåstjern         | Blue star           | Nord-Trøndelag: Nordli (Høeg 1974:493)   |
| Feitegras         | Fat grass           | Norway, unspecified (Reichborn-Kjennerud 1922:87)  |
| Feitgras          | Fat grass           | Norway, unspecified (Tonning 1773:4, as Feit-Gras)   |
| Feitgress         | Fat grass           | Norway, unspecified (Viborg 1793:15, as Feitgræs; Homemann 1806:20, as Feitgræs)   |
| Feittstjerna      | Fat star            | Troms: Sørreisa (Høeg 1974:493)  |
| Flogfangar        | Fly-catcher         | Nordland: Vefsn (Lundestad 1992:35; Øksendal 1977:99, 1993:110)  |
| Geitablom         | Goat flower         | Hordaland: Kvinnherad (Høeg 1974:493)  |
| Geitmjøl          | Goat milk           | Sør-Trøndelag: Selbu (Høeg 1974:493)   |
| Giftgras          | Poison grass        | Sør-Trøndelag: Røros (NFS O.A. Høeg)   |
| Gjeitfettblomster | Goat-fat-flowers    | Sør-Trøndelag: Bjugn: Stjerna (Høeg 1974:493)  |
| Gjetslek          | Goat's lick         | Hedmark: Tolga (Høeg 1974:493)   |
| Gjøketunge        | Cuckoo's tongue     | Hedmark: Elverum (Høeg 1974:493)   |
| Istegras          | Curdle grass        | Buskerud: Sigdal (NEG 69:14517)  |
| Kinnekrass        | Butter bucket cross | Hordaland: Fusa; Sund: Hamre; Masfjorden; Sogn og Fjordane: Aurland; Balestrand (Høeg 1974:493); Nordland: Steigen (Høeg 1974:493)                   |
| Kjæsegras         | Rennet grass        | Norway, unspecified (Reichborn-Kjennerud 1922:87); Telemark: Notodden: Bolkesjø (Djupedal 1959:65), Seljord (Ross 1895:397), Tinn (Klonteig 2000:83) |
| Kjæsegress        | Rennet grass        | Telemark (Wille 1786:122, as Kjæse-Græs)   |
| Kjerringkjeft     | Old woman's mouth   | Telemark: Vinje (Høeg 1974:493)  |
| Kjokkmjølgras     | Thick-milk-grass    | Sør-Trøndelag: Soknedal (Høeg 1974:493)  |
| Korstroll         | Cross-troll         | Sør-Trøndelag: Holtålen: Ålen (Høeg 1974:493)  |
| Kukors            | Cow cross           | Hordaland: Fusa: Hålandsdal (Høeg 1974:493)  |
| Maria tåregress   | Mary's tear grass   | Nordland: Rana (unpublished note by A. Blytt 1870, as Mariæ Taaregræs)   |
| Marie sko         | Mary's shoe         | Hordaland: Bergen (Rørdam 1873:405, diary note by Sivert Grubbe, July 6, 1599)   |
| Maritetta         | Mary's rennet       | Hordaland: Ulvik (Høeg 1974:492)   |

TABLE 1. (continued)

| Norwegian     | English translation | Area and source  |
|---------------|---------------------|--|
| Melkekors     | Milk cross          | Norway, unspecified (Viborg 1793:15; Hornemann 1806:20); Sogn og Fjordane: Vågsøy: Nordre Vågsøy (Høeg 1974:493); Møre og Romsdal: Sunnmøre area (Strøm 1756:fol. 66a, as Melcke-Kaarsset; Strøm 1762:111, as Mælke-Kors)                              |
| Melkekross    | Milk cross          | Sogn og Fjordane: Lærdal (NFS Manum)   |
| Mjelkekors    | Milk cross          | Sogn og Fjordane: Førde, Naustdal (Høeg 1974:493); Jølster (NEG 69:14362); Møre og Romsdal: Sunnmøre (Aasen 1860:10)   |
| Mjelkgras     | Milk grass          | Hordaland: Sund (Høeg 1974:493)  |
| Mjelkgress    | Milk grass          | Nordland: Grane (Høeg 1974:493)  |
| Mjelkkross    | Milk cross          | Hordaland: Sunnhordland area (Høeg 1974:493)   |
| Mjeltekors    | Milk cross          | Norway, unspecified (Schübeler 1888:184); Møre og Romsdal: Ørsta: Vartdal (Høeg 1974:493)  |
| Mjelkegras    | Milk grass          | Hedmark: Eidskog, Os (Høeg 1974:493)   |
| Mjelkekors    | Milk cross          | Hedmark: Eidskog (Fjellstad 1966:171); Vest-Agder: Farsund: Lista; Hordaland: Fusa, Kvam, Strandbarm, Stord, Tysnes; Sogn og Fjordane: Balestrand, Bremanger, Høyanger: Lavik, Leikanger, Lærdal, Sogndal, Vik; Møre og Romsdal: Herøy (Høeg 1974:493) |
| Mjelkekross   | Milk cross          | Sogn og Fjordane: Høyanger (NFS Manum); Møre og Romsdal: Sunnmøre area (Aasen 1860:10)   |
| Mjølkrøt      | Milk root           | Sør-Trøndelag: Selbu (Høeg 1974:493)   |
| Mjeltekross   | Milk cross          | Norway, unspecified (Schübeler 1888:184)   |
| Myrbukk       | Mire buck           | Sogn og Fjordane: Jølster (Høeg 1974:493)  |
| Myrstjerne    | Mire star           | Nordland: Hadsel, Tjeldsund (NFS O.A. Høeg); Troms: Berg (NEG 69:14465); Finnmark: Alta (NEG 69:14465).  |
| Orm(e)gras    | Worm grass          | Telemark: Nissedal; Møre og Romsdal: Halså (Høeg 1974:493)   |
| Ringormblomst | Ringworm- flower    | Nordland: Sortland (Høeg 1974:493); Troms: Tromsø (NFS O.A. Høeg)  |
| Ringormgras   | Ringworm-grass      | Oppland: Lillehammer: Fåberg (Høeg 1974:493); Telemark: Nissedal (NFS O.A. Høeg); Nordland: Steigen, Sortland (Høeg 1974:492-493); Troms: Skånland, Sørreisa (Høeg 1974:493)   |

TABLE 1. (continued)

| Norwegian    | English translation | Area and source   |
|--------------|---------------------|---|
| Ringormgress | Ringworm grass      | North Norway, unspecified (NFS Gade-Grøn 49, as ringormgræs)  |
| Såpeblomme   | Soap flower         | Telemark: Vinje (Halvorsen 1988:198)  |
| Sinagras     | Sina grass          | Rogaland: Sandnes: Hetland (Høeg 1974:493)  |
| Skåleblom    | Cup flower          | Aust-Agder: Bykle (Høeg 1974:493)   |
| Sleipgras    | Slippery grass      | Nordland: Brønnøy: Velfjord (Høeg 1974:493)   |
| Slimgras     | Slime-grass         | Norway, unspecified (Tonning 1773:4, as Sliim Gras)   |
| Slimgress    | Slime-grass         | Norway, unspecified (Viborg 1793:15, as Sliimgræs; Hornemann 1806:20, as Sliimgræs—both probably based on Tonning 1773)   |
| Smørkross    | Butter cross        | Sogn og Fjordane: Aurland, Luster: Hafslo (Høeg 1974:493)   |
| Snigleblom   | Snail flower        | Møre og Romsdal: Vågsøy: Nordre Vågsøy (Høeg 1974:493)  |
| Sniglegras   | Snail grass         | Møre og Romsdal: Vågsøy: Nordre Vågsøy (Høeg 1974:493)  |
| Sprenggras   | Burst grass         | Hedmark: Tolga (Reichborn-Kjennerud 1922:87); Sør-Trøndelag: Holtålen: Haltdal, Ålen, Melhus, Midtre Gauldal: Singsås, Tydal (Høeg 1974:493)                                      |
| Tætgras      | Thickening grass    | Nordland: Hattfjelldal (unpublished note by H. Christensen)   |
| Tættegras    | Thickening grass    | Nordland: Rana (Heltzen 1834/1981:63); Troms: Tromsø (Solvang 1924:28)  |
| Tættegras    | Thickening grass    | Nordland: Rana (Heltzen 1834/1981:63); Troms: Tromsø (Solvang 1924:28)  |
| Tættegress   | Thickening grass    | Troms: Tromsø or Lyngen: Ullsfjord (NEG 69:17443); Finnmark: Sør-Varanger (NFS O.A. Høeg 90)  |
| Tættgras     | Thickening grass    | Nordland: Vega (Engen 1975)   |
| Tetegras     | Thickening grass    | Oppland: Østre Toten (Høeg 1974:492)  |
| Tetta        | "Rennet"            | Hordaland: Ulvik (Høeg 1974:492)  |
| Tettagras    | Thickening grass    | Østlandet (Høeg 1974:472); Rogaland: Finnøy: Sjernarøy (NEG 69:14326), Karmøy: Torvastad (NEG 69:14655), Suldal (Sandvik 1991:283) (Høeg 1974:492)                                |
| Tette        | "Rennet"            | Hordaland: Hardanger area (NFS Manum)   |
| Tetteblad    | Thickening leaf     | Hedmark: Folldal (NFS Manum), Stange (NFS Manum); Oppland: Lillehammer (NFS Manum); Akershus: Skedsmo (NFS Manum); Hordaland: Hardanger (NFS Manum); Troms: Tromsø (EBATA 2001:7) |
| Tetteblomst  | Thickening flower   |   |

TABLE 1. (continued)

| Norwegian | English translation | Area and source  |
|-----------|---------------------|--|
| Tettegras | Thickening grass    | Norway, unspecified (Aasen 1860:10; Ramus 1715:270); Hedmark: Eidskog (Fjellstad 1966:171), Elverum (NEG 69:14267), Folldal (NEG 69:14554), Grue (NFS Manum), Tynset (NEG 69:14262), Åsnes: Hoff (NEG 69:14372); Oppland: Begndal (Hagen 1950:281), Fron (Jenshus 1986:181), Gausdal (Vestad 1984:60; NEG 69:15596), Lillehammer (NFS Manum); Sør-Aurdal (NFS Manum), Sør-Fron (NFS Manum), Vestre Slidre (NOS, note by G. Kirkevoll), Valdres area (Kirkevoll 1940:174; Lineikro 1975:53; NOS, note by O. Hegge), Øyer (NEG 69:15278); Østfold: Spydeberg (NEG 69:14290); Buskerud: Hemsedal (NEG 69:14904), Hol (NOS, note by G. Sollien), Nore og Uvdal (NEG 69:14398), Numedal area (Flatin 1918:56), Ringerike (NFS Manum); Vestfold: Andebu (NOS, note by O. Bråvøll & O. Berg), Telemark: Kragerø (NFS Manum), Porsgrunn: Brunlanes (NEG 69:14363), Tinn (Klonteig 2000:78); Aust-Agder: Birkenes: Herefoss (NEG 69:14380), Risør: Sønnerled (NEG 69:14279); Valle (NEG 69:14307), Åmli: Gjøvdal (NEG 69:14289); Vest-Agder: Kvinesdal (NEG 69:14375), Vennesla (NEG 69:14370); Rogaland: Forsand (NEG 69:14391), Gjesdal (NEG 69:20503), Hjelmeland: Fister (NEG 69:14344), Hå: Nærbø, Sandnes: Høgsfjord (NOS, note by T. Hannaas), Time (NEG 69:14366), Vindafjord: Imsland (NEG 69:15141); Hordaland: Askøy: Lavik (NOS, note by T. Hannaas), Bømlo (NEG 69:14392), Etne (NEG 69:15226), Lindås (NEG 69:14477), Os (NOS, note by T. Hannaas), Ullensvang (Skre & Skre 1974:53), Voss (NEG 69:14284); Sogn og Fjordane: Askvoll (NOS, note by T. Hannaas), Jølster (NEG 69:14404), Stryn (NOS); Møre og Romsdal: Averøy: Kvernes (NEG 69:14320), Fræna (NEG 69:14259), Hareid (Bjørndal 1949:121), Sunndal: Øksendal (NEG 69:14954), Vanylven (NEG 69:14885, 19514), Volda (NEG 69:14302), Ålesund: Borgund (NEG 69:15171); Sør-Trøndelag: Agdenes (NEG 69:14294), Hemne (NEG 69:14387, 14400), Holtålen: Håltadalen (NEG 69:14282), Midtre Gauldal: Singsås, Soknedal and Støren (NEG 69:14508, 14300, 14281), Selbu (Evjen 1986:63), Snillfjord (NEG 69:17287); Nord-Trøndelag: Levanger: Skogn (NEG 69:14579), Lierne: Nordli |

TABLE 1. (continued)

| Norwegian       | English translation  | Area and source   |
|-----------------|----------------------|---|
| Tettegres       | Thickening grass     | (NEG 69:14345), Steinkjer: Sparbu (NEG 69:14330), Verdal (NEG 69:14384); Nordland: unspecified (NEG 69:14356), Bindal (NEG 69:14368), Grane (NEG 69:14274), Hattfjelldal (NEG 69:14312; NOS, note by Hallfrid Christiansen), Brønnøy: Velfjord (Strompdal 1938:73), Vefsn (NEG 69:16462), Meløy (NEG 69:14468), Beiarn (NEG 69:14621), Skjerstad (NEG 69:21821), Bodø: Kjerringøy (NEG 69:14468), Lofoten area (Blix 1971:218-219), Vestvågøy (NOS, note by Hallfrid Christiansen); Troms: Harstad (Alm 1983:393), Berg (Høeg 1974:492) Telemark: Skien (NFS Manum)   |
| Tettegress      | Thickening grass     | Norway, unspecified (Gunnerus 1772:20, as Tætte-Græss; Hornemann 1806:20, as Tættegræs; Schübeler 1888:184, as Tettegræs; Tonning 1773:4, as Tætte-Græs; Viborg 1793:15, as Tættegræs); Oppland: Gudbrandsdalen area (Hiorthøy 1785, as Tette-Græs), Vestre Toten (NFS Manum); Buskerud: Kongsberg (G.T. Holm in a 1750's manuscript, printed in Høeg 1940:95, as Tættegræss); Sogn og Fjordane: Sunnfjord area (Arentz 1802:87, as Tette-Græs); Møre og Romsdal: Nordfjord area (Krogsh 1813:289, as Tættegræs), Sunnmøre area (Strøm 1756:fol. 66a, as Tette-Græsset, 1762:111, as Tette-Græs); Sør-Trøndelag: Meldal (NFS Manum), Selbu (NEG 69:21925), Nord-Trøndelag: Grong (NEG 69:14263), Verdal (Gunnerus 1768:81, as Tætte-Græs); Nordland: Hattfjelldal (NFS Manum), Beiarn (NEG 69:14359), Hamarøy (EBATA 2005:70), Andøy (EBATA 2005:52); Troms: Harstad (Alm 1983:393; NEG 69:14547), Dyrøy (NEG 69:22808), Torsken (EBATA 1984:6), Balsfjord (NEG 69:20627), Tromsø (EBATA 2005:44, 50), Lyngen or Tromsø: Ullsfjord (NEG 69:17443), Storfjord (Nilsson & Johansen 1994:49), Kålfjord (NEG 69:16667), Skjervøy (EBATA 2005:45), Kvænangen (NEG 69:20974); Finnmark: Hammerfest (EBATA 2001:1, 2005:2), Kvalsund (EBATA 2005:13), Måsøy (EBATA 1994:1), Lebesby (NEG 69:22155), Sør-Varanger (annotated voucher specimen by A.B. Wessel in TROM) |
| Tettegubbe      | Thickening old man   | Akershus: Skedsmo (NFS Manum); Troms: Tromsø (EBATA 2005:43)  |
| Tettermjølkgras | Thickened-milk grass | Nord-Trøndelag: Meråker (Høeg 1974:493)   |

TABLE 1. (continued)

| Norwegian     | English translation     | Area and source  |
|---------------|-------------------------|--|
| Tetteplante   | Thickening plant        | Vestfold: Tjorne (NEG 69:14491); Telemark: Drangedal (NFS Manum); Troms: Lenvik (EBATA 2004:23)  |
| Tettgras      | Thickening grass        | Hedmark, widespread (Høeg 1974:492), Elverum (Øvrebø 1939:4), Åsnes (NFS Manum); Oppland, widespread (Høeg 1974:492), Dovre (Solberg 1937:229); Møre og Romsdal: Tingvoll (Sortdal 1981:22; NEG 69:14381); Sør-Trøndelag: Oppdal (Rise 1947:51); Nord-Trøndelag: Nærøy: Foldereid (NEG 69:14309) |
| Tettgubbe     | Thickening old man      | Hedmark: Elverum (Høeg 1974:492; NFS Manum); Trysil (Furuseth 1980:126, name also used for <i>Drasera</i> spp.); Akershus: Skedsmo: Lillestrøm (Høeg 1974:492); Sør-Trøndelag: Orkdal: Geitastrand (Høeg 1974:492); Troms: Bardu (Høeg 1974:492)   |
| Tetmelkplante | Thickened-milk plant    | Nord-Trøndelag: Steinkjer (NFS Manum)  |
| Tettplante    | Thickening plant        | Hedmark: Rena (NFS Manum)  |
| Tettskjørgull | Thickening fragile gold | Sør-Trøndelag: Meldal (Høeg 1974:493)  |
| Tittagras     | Thickening grass        | Østlandet, unspecified (Høeg 1974:492); Rogaland: Hå: Nærbø (NEG 69:14367)   |
| Titte         | "Rennet"                | Norway, "rare" (Høeg 1974:492)   |
| Tittegras     | Thickening grass        | Hordaland: Odda (NEG 69:22415)   |
| Tittgubbe     | Thickening old man      | Sør-Trøndelag: Selbu (Høeg 1974:492; NFS Manum)  |
| Tjettblad     | Thickening leaf         | Sør-Trøndelag (Weisæth 1990:84)  |
| Tjettgras     | Thickening grass        | Nord-Trøndelag (Høeg 1974:492), Steinkjer: Beitstad (NEG 69:15202) and Egge (NEG 69:14295)   |
| Tjettgras     | Thickening grass        | Sør-Trøndelag (Weisæth 1990:84)  |
| Tjettgress    | Thickening grass        | Nord-Trøndelag (Høeg 1974:492), Grong: Hauan (NEG 69:14280)  |
| Tussebetgras  | Gnome-bite grass        | Buskerud: Hallingdal (Mehlum 1891:397; Reichborn-Kjennerud 1922:87)  |
| Vassfiol      | Water violet            | Telemark: Vinje: Mosli (Høeg 1974:493)   |
| Vibefeit      | Lapwing fat             | Nordland: Beiarn (NEG 69:14261)  |
| Ystegras      | Curdle grass            | Buskerud: Krødsherad (Mørch 1976:993)  |

the plant, and used to treat what people considered to be *tussebitt* ("gnome bites"), usually infected wounds (Mehlum 1891:397; Reichborn-Kjennerud 1922:87). Høeg (1974:492) noted that the leaves were used for wounds, e.g. in Modalen (Hordaland, W Norway) and Rana (Nordland, N Norway). A slightly more frequent medicinal use was to cure ringworms, recorded at Lillehammer (Hedmark, SE Norway), Sortland (Nordland), Sørreisa, Berg, and perhaps Tromsø (Troms), the four latter all in N Norway (Høeg 1974:492; Reichborn-Kjennerud 1922:87, 1941:56; NFS Gade-Grøn 49). The mode of use was simple: "The root [rosette] leaves were used for ringworms. They rubbed the leaves around the sick part." (NFS O.A. Høeg). In Fåberg, SE Norway and Rana, N Norway, the leaves were used to treat warts. They have also served as a cure for eczema in Troms (Høeg 1974:492) and in Porsanger, Finnmark (EBATA 2005:84), N Norway.

### Folk veterinary medicine

Locally, *Pinguicula vulgaris* has found some use in folk veterinary medicine, again mainly as an external ointment. Some used it to treat wounds (Høeg 1974:492; Kirkevoll 1940:174). According to the latter author, it was mixed with linseed oil in Valdres (Oppland, SE Norway). *P. vulgaris* was also used as a cure for sore teat. Sámi herdsmen used the leaves of *Pinguicula* to treat sore teat in reindeer (Gunnerus 1772; Tonning 1773:5), and Norwegian farmers used it for cows in Lærdal and Vik (Sogn og Fjordane, W Norway), and for cows and goats in central Norway (Høeg 1974:492; Weisæth 1990:84). The record from Lærdal is instructive:

(...) this is *Melkekrossen* ["the milk cross"]. It grows on wet rocks and in damp places. At home, we used to boil it with some kind of fat. It was used to anoint the teat of cows when they were sore or cracked. This was a good, old advice which we used when I was at the summer farm at home in Sværefjorden. Perhaps it is still used." (NFS Manum, letter dated 28 September 1958).

In Etne (Oppland) and Hægeland (Aust-Agder), Høeg (1974:492) recorded local use of *P. vulgaris* to calm down cows who had already mated. According to Storaker (1928:63), it was also used to cure some kind of "bone disease" in cattle.

### Calendar

A wide range of plants have served as calendar marks in Norway, e.g. to indicate when the harvest could start. *Pinguicula vulgaris* is not an important one, but has found at least local use, a tradition first noted by Hans Strøm in his 1756 diary:

"When *Tette-Græsset* or *Melke-Kaarset* has sprouted, one uses this as a sign, that the cattle are fed [will find sufficient pasture] and may, without danger, be let out to feed on the grass." (Strøm 1756:fol. 66a, cited from Standal *et al.* 1997:143).

Høeg (1974:492) noted a similar tradition, i.e. that the cows could survive outdoors when the rosettes of *P. vulgaris* appeared, at some stations in Western Norway. In a few cases, flowering is suggested as the marker, but this gives an unlikely, late date.

### **Apotropaic and magical uses**

In parts of western Norway, *P. vulgaris* is known as *mjølkekross* ("milk cross") and similar names. The plant was placed in the milk bucket the first time the cows were milked outdoors in spring (Høeg 1974:491-492); the same tradition applied to *Potentilla erecta* (L.) Räuschel. In both cases, the practice served mainly as an apotropaic, based on a kind of similarity magic: putting the "fat" leaves of *Pinguicula vulgaris* or the yellow flowers of *Potentilla erecta* into the milk bucket should ensure a good yield of fat and yellow butter. A fine account is available from Høyanger in Sogn og Fjordane, W Norway:

"I know this plant well. (...) It was called *mjølkekross*. In spring, during the first evening the cows were milked outdoors, we had to burn *bueld* ["farm or cattle fire"]. That is, we collected wood and juniper (*sprake*) to make a fire. While it was burning, the cows should be milked, and in the milk bucket, there had to be a fine *mjølkekross*. This should ensure a good yield of milk during the summer. I was told so by an old dairy maid when I accompanied her while she was milking the cows." (NFS Manum, undated [1958] letter).

The observation had been made some 45 years earlier, i.e. about 1913, when the female informant had visited the neighbouring farm and repeatedly participated in the "bueld" ritual. Her great-grandmother had done the same thing, but kept it secret—as is often the case with such magic rites (additional letter from the same female informant in NFS Manum).

Exceptionally, *P. vulgaris* has also served other magical purposes. At Ringerike (Ådal) in SE Norway, people believed that if the plant was laid under the pillow for the night, the girls would dream of their coming husband (NFS Manum). Children in Dalsfjord (Volda, W Norway) believed that finding much *P. vulgaris* meant they would recover all their sheep when the pasture season was over in the autumn (Høeg 1974:492).

### **Children's games**

*Pinguicula vulgaris* is hardly an attractive plant for children, though it may at least arouse their curiosity. The only record of any use in children's games derive from the island of Seiland in Finnmark, N Norway: "As children we used the rosette as soap. It was somewhat slippery and slimy and felt like handling soap." (EBATA 2005:2).

### **Use in dairy products**

According to widespread lore in Norway, the leaves of *P. vulgaris* were used to treat milk, which although turning sour, would still retain a better taste than if



left untreated, and also gain a desired "thick" quality. (Bergsaker 1982; Grude 1945:106; Hovdhaugen 1971:34; Sandvik 1991; Schübeler 1888:185; records in NEG, NFS, and NOS). Høeg (1974:490) collected information on such use from 83 municipalities in Norway. However, descriptions of the actual process of preparing such milk differ widely in folk tradition, as do the ascribed qualities or characteristics of the product. Several aspects need to be clarified: how "tettemelk" was made, the product and its characteristics, why it was made, and, finally, geographical distribution and time-line.

### Preparation

"Thickened" milk could be made in several different ways. Most frequently, it was made by adding a small amount of *tette* or rennet, often just a spoonful, as a starter culture. This *tette* could, however, derive from various sources. At least in the 19th and 20th century, rennet from the belly of slaughtered calves was the most frequently used source of rennet in Norwegian peasant societies. It contains a proteolytic enzyme and various milk bacteria, and its ability to produce curdled milk is well documented (cf. Wix 1995, 1996).

Contrary to this, the effect of *tette* made from *Pinguicula vulgaris* is disputed. Ramus (1715:270), Gunnerus (1772), Tonning (1773) and other 18th century authors found no reason to doubt that *tettegress* could be used to prepare thickened milk. An early account is found in the 1756 diary of Hans Strøm, in a section detailing the plant lore of Kvamsøya in Sande, Møre og Romsdal, W Norway:

"This herb is also placed in the milk which by this shall gain a fine taste, or perhaps become thicker." (Strøm 1756:fol. 66a, cited from Standal et al. 1997:143).

In his *Flora norvegica*, also a rich source of plant-lore, Gunnerus (1772:20) included only a very short note on the ethnobotany of *P. vulgaris*: "Norv. *Tætte-Græss* (quia adhibetur lacti hyperboreo parando)." A much more detailed account of the way *tettemelk* was prepared is found in his 1774 treatise on dairy products in Norway:

"Thick sour milk is much used for food in Norway, and when prepared for this purpose, one mostly uses *Tætte*" (...) "to make it thick, by which it acquires a better taste. For *Tætte* is used the well-known, so-called *Tætte-Græs* (*Pinguicula vulgaris*), of which the leaves are put in a dish of fresh milk, which thereafter thickens and becomes so sticky, that it may be drawn out in long threads. Subsequently, this *Tætte* will pass its quality on to other milk, into which a spoonful is mixed, just as has already been noted by Mr. von Linné in his *Flora lapponica* n. XI p. 10. litt. 3. *de lacte compacto hyperboreo*; and this thick milk, which in this way passes on to further milk, into which it is mixed, the same character, has from this property acquired the name: *Tætte-Melk*." (Gunnerus 1774:142-143).

Tonning (1773) added some interesting details, including observations on the time of year for such practice, and the supposed economic benefits:

"In some places in Norway, when the summer is at its warmest, and the milk will not easily curdle, but rather usually becomes sour too quickly, the peasant wives places the fat and slimy leaves of this herb in the sieve, through which the fresh milk is passed, which in two or three days gives the so-called Tæt-Melk (*Lac hyperboreum*). This kind of milk, which thereby becomes so thick and viscous, that it may be drawn out in long strings, is very economic in numerous rural households, since it may be mixed either with fresh milk, or with water, and thereby greatly increased [in quantity]." ... "Such Tæt-Melk is not known to be used in other places than in Norway and Sweden." (Tonning 1773:4-5).

At Gudbrandsdalen in SE Norway, Hiorthøy (1785) recorded the following procedure:

"This grass is collected and placed in the milk vessels, so that the milk should more rapidly curdle and become thick. A spoonful of such milk is subsequently used for other milk vessels, since it has the same effect as the grass itself" [i.e., served as a starter culture] (Hiorthøy 1785:99).

Klonteig (2000) provides a detailed account of the procedure used at Tinn in Telemark, SE Norway. He also noted that *P. vulgaris* had to be collected in spring, while it was growing.

"They rubbed clean wooden cups, troughs or buckets with this leaf rosette [of *P. vulgaris*]. Then they poured fresh milk into the cup. It is left standing until the milk thickens and gets suitably sour. It should not be left standing for so long that the milk could be drawn out as long threads. The *tette* fungus [sic] prevented the milk from getting mouldy or rotten, so that it stayed fresh for a long time." (Klonteig 2000:43; further comment on the time of year p. 78).

Related procedures, i.e. sieving fresh milk through *Pinguicula* leaves, or pouring milk into a container with such leaves, are frequently mentioned in folkloristic and ethnobotanical literature. Evjen (1986:63) claimed that at least locally in Trøndelag, the plant part used was the crushed roots, not the leaves. A record from Jølster in Sogn og Fjordane, W Norway, confirms that the roots were sometimes included, and provides some additional details on the collection of plant material:

"They put their fingers down at the plant [base], below the root, and then extracted both the root and the plant, washed it and put it at the bottom of the container." (NEG 69:14362)

In most cases, only the leaves were used. Some specify that they had to be thoroughly cleaned, others that washing the plant should be avoided, as recorded in Kvænangen, Troms (N Norway):

"At Valan, two old females told me that one had used *tettegres* (...) to make rennet. When using the plant, it should not be washed. The root was cut off and insects stuck in the slime were removed; the rennet was in the slime." (NEG 69:20974)

It should be noted that almost all ethnobotanical traditions included here apply to the Norwegian majority population, living in what was traditionally a faring society. Sørensen & Olsen (1981:28-29) mention similar use of *P. vulgaris* as a substitute rennet among the Finnish ethnic minority of SE Norway, also with an agriculture-based way of living. Contrary to this, *Pinguicula* plays a minor role in Sámi ethnobotany. Those that were involved in traditional reindeer herding would have little use for it (except to treat sore teat in reindeer); the fat reindeer milk hardly needs rennet to become thick, although *Angelica archangelica* L. was often added, according to some authors (e.g. Kuoljok 1971:58) as a kind of rennet. A single example of Sámi use of *Pinguicula vulgaris* as a rennet substitute may be quoted, from Seiland at the coast of Finnmark, N Norway, where people based their living on fisheries and small-scale agriculture. Referring to the 1950's or later, its use was described as follows:

"We collected these stars [the leaves], washed them, and poured warm, fresh milk over them. It was left standing for a day or so, and then it became thickened milk." "It was like a pudding in the bowl. When you took a spoonful, the hole remained." Only fresh milk was considered suitable: "When they ceased having cows, they tried with milk they had bought. But it did not work, (...) it did not turn into true thickened milk." (EBATA 2001:1)

A frequently used, alternative source of rennet in Norwegian folk tradition was terrestrial snails, e.g. the large, black *Arion ater* L., and, according to the descriptions given, several other species as well. Accordingly, such snails were known as *tettegubbe* ("thickening old man") or similar terms (numerous records in NEG 79); identical names have been recorded for *Pinguicula vulgaris* (Table 1). Høeg (1974:490) commented on this tradition, but expressed some doubt if snails had really been used in milk. Such use is, however, well documented from the western, central and northern parts of Norway (Alm 1983:393, 1985:41-42; Bjørndal 1949:121; Blix 1971; Evjen 1986; Fjellstad 1966:171; Hovdhaugen 1971:34; Weisæth 1990; NFS Gade-Grøn 150; numerous records in NEG). At least in the north, this tradition survived well into the 20th century. In Troms, I have repeatedly been told the names of persons who had used snails for this purpose (e.g. EBATA 1978:26, 2005:45). My own mother had been served *tettemelk* in her youth, but did not like it, in particular because one—according to local lore—could get an unpleasant surprise when the bottom of the bucket became visible. Leaves of *Pinguicula* were not objected to by anyone, but snails certainly were. In some cases, snails may have been more commonly used than *Pinguicula*, leading to a folk belief that the effect of the latter was due to snails having rested on the leaves, depositing slime (Alm 1983:393). In Møre og Romsdal, W Norway, snails were considered the "very best" source of *tette* (Bjørndal 1949:121). A few records also show that such use was known, at least locally, by the Finnish and Sámi ethnic minorities, e.g. at Porsanger in Finnmark, N Norway (EBATA 1992:11).

The note of Bjørndal (1949) is interesting in specifying that three different

kinds of rennet were used at Hareid in Møre og Romsdal (W Norway)—and that an apotropaic precaution was added when preparing the milk:

“(...) to get thickened milk, they either used rennet from previously prepared thickened milk, or *tettegras* (*Pinguicula vulgaris*), or, the very best: an ordinary black snail. The rennet should be applied to the bottom of the bucket with the fingers, not with a spoon or other utensils, and always in the shape of a cross. If snails were used, they were first wrapped in linen towels and then placed two by two as a cross. This was done to ward off evil.” (Bjørndal 1949:121).

### **The product and its characteristics**

*Pinguicula*-based thickened milk was usually made from fresh milk, without heating or boiling it. When *tette* had been added to the milk, the mixture was stored in a modestly warm place, often on a special shelf. It should not be too warm, in which case the product would turn sour, nor too cold. The final product, i.e. fine *tettemelk* (thickened milk), should be fresh, not very sour, taste well, and be so viscous that it formed a rope from the spoon when retrieved from the container (Jæger-Leirvik 1959). Though descriptions of *tettemelk* vary, most (e.g. Sørensen & Olsen 1981:29; Sortdal 1981; NFS Manum) agree that it was more viscous orropy than milk made from ordinary rennet.

As to the rennet or *tette* itself, whether derived from calves or from *Pinguicula*, people knew that it could be stored for long periods. Weisæth (1990:78) noted that people at a farm in Trøndelag had kept the same culture for more than 40 years. His experiments also showed that *tette* made from *P. vulgaris* was robust, and could be stored in frozen condition. More frequently, *tette* was stored in a desiccated form (Lorås 1978:8), e.g. by letting it dry in a glazed cup (Jæger-Leirvik 1959:46), in a towel (Støren 1919), in a wooden container (Weisæth 1990:76), or on a piece of wood, which was put in a bag and placed in the food stores (Ambjørgrud *et al.* 1965). When needed again, it was soaked in fresh milk or in a mixture of warm water and fresh milk (Weisæth 1990:76).

### **Why was it made?**

In the old Norwegian society, milk often formed a large part of the diet. It could be the major constituent of several daily meals, especially in inland areas, less so at the coast (Grøn 1942:82). In addition to the culinary aspects noted above, there were two main reasons for preparing *tettemelk*—related to economy and storage.

In the past, fresh or sweet milk was little used in Norway (Grøn 1942:83; Opedal 1940:55). Cream was usually removed to make butter, most of which was sold to allow some cash income. *Tettemelk* could be prepared from both full and skimmed milk. In both cases, the milk sugars (lactose) were transformed to milk acid (Weisæth 1990:83). Due to its thick character, *tettemelk* had a greater ability to make people feel well fed (Lorås 1978:7). It could also be mixed with water and consumed as a drink to quench thirst.

In the past subsistence economy, cattle were frequently inadequately fed during the winter, especially towards spring as fodder stores ran out. As a result, cows would only produce milk for a restricted period of year, mainly in summer (Jæger-Leirvik 1959:46). Preparing curdled milk was important in terms of allowing milk products to be stored. The various "thickened" milk products (bearing a wide variety of vernacular names in Norwegian) could easily be stored for a long time, depending on storage conditions and the time of year. Storing for weeks, months or half a year or more is frequently mentioned in the NEG records. Jæger-Leirvik (1959:47) made a much more modest claim, that *tettemelk* could be stored for about one week.

Rennet was also used to prepare *kjellermelk*, i.e. "cellar milk," which could be stored for several months in summer (Grøn 1942:84). Freshly sieved, warm milk was mixed and boiled with 1/3 of water, cooled to body temperature, and transferred to a barrel with rennet. This procedure was repeated daily until the barrel was full. The mixture was stirred frequently, until turning sour. Only skimmed milk was used (Støren 1919). Contrary to *tettemelk*, "cellar milk" was boiled before transfer to the buckets where it was stored (Weisæth 1990:78). The product could be stored for about one year (Grøn 1942:84; Olsen-Sopp 1912). In parts of Norway, large containers of milk prepared in this way were stored for winter use, e.g. in wooden buckets holding up to 300 litres at Målselv in Troms, N Norway (Sæter 1926:234).

### **Geographical distribution and time-line**

Utilization of *Pinguicula vulgaris* as a rennet substitute—and vernacular names that suggest such use (Table 1)—are known from most of Norway, including Østlandet/SE Norway (Fjellstad 1966:171; Flatin 1918:56; Hagen 1950:281; Halvorsen 1988:198; Kirkevoll 1940:174; NFS Manum), Vestlandet/W Norway (Aasen 1860:10; Arentz 1802:87; Bjørndal 1949:121; Lundberg 1998:253-254; Skre & Skre 1974:53; Strøm 1762:111-112; NFS Manum), Trøndelag (Evjen 1986:63; Weisæth 1990:84; NFS Manum) and North Norway (Alm 1983:393; Blix 1971:218-219; Jenssen 1982:44; Solvang 1924:28; Strompdal 1938:73; NFS Manum); numerous records in Høeg 1974 and NEG may be added to this list.

Preparation of *tettemelk* with *P. vulgaris* seems to have survived longer in the central and northern parts of Norway than in the south. In the latter area, such use may have been uncommon already in the 19th century. In his large Norwegian dictionary, the linguist Ivar Aasen explained *tettegras* as "A herb, which was previously used to make 'Tette'" (Aasen 1873; cf. Grøn 1942:83). Contrary to this, some of those who contributed to the NEG records, mostly in 1959-1960, had first-hand experience of such use. In fact, *tettemelk* may still be used in parts of Norway. According to Weisæth (1990:78) it was in daily use at some farms in Trøndelag, Central Norway in the late 1980's. Thickened milk based on *P. vulgaris* is now marketed as a commercial product by a dairy at Røros in

Sør-Trøndelag, Central Norway (Ola Arvid Feragen, pers. comm. 2005), available throughout Norway.

Although common, the practice of using *Pinguicula vulgaris* as a substitute rennet was not universally known. From Telemark in SE Norway, Wille (1786:122) noted that it was "used here only very rarely instead of rennet." At Krødsherad in Buskerud, SE Norway, Mørch (1976:993) noted that "*Ystegras* (*tettegras*) is not known to have been used for making thickened milk."

As an alternative to *Pinguicula vulgaris*, a few sources mention similar use of *Drosera* leaves, e.g. in Rogaland (NOS) and Trøndelag (Weisæth 1990). Høeg (1974) does not mention such use of *Drosera* species, but he recorded some vernacular names, similar to the most frequent ones for *Pinguicula vulgaris*, that would suggest it.

### **The effect on milk: folk belief or reality?**

In the early 20th century, Olsen-Sopp (1912) carried out an experimental study of *tettemelk* and how it could be made. According to him, *Pinguicula*-based cultures failed to produce true thickened milk. The product did have a ropy character, but an evil smell. Nilsson (1950), who carried out a microbiological study in Sweden, came to similar conclusions. Experiments at a dairy laboratory in Rogaland (SW Norway) in the 1970s also failed to produce a satisfying product (Bergsåker 1982). Ambjørgrud *et al.* (1965) considered the effect of *Pinguicula* to be little more than mere superstition. Lorås (1978), in her thesis on dairy products, carried out new experiments with *Pinguicula vulgaris* as a source of rennet, but concluded that it was useless.

On the other hand, it is easily proven that sieving milk through *Pinguicula* leaves gives it a ropy character, instantly yielding at least a small amount of a highly viscous, jelly-like product. According to my own experiments, this works even with pasteurised milk, but yields only a small amount, whereas Weisæth (1990:80) succeeded only with fresh milk. Several informants cited in Høeg (1974) noted that one should use fresh, still warm milk directly from the cow.

Even in ethnobotanical literature, the effect of *P. vulgaris* on milk is disputed. Høeg (1974:490) suggested that it was nothing but an example of the doctrine of signatures, i.e. that people inferred the alleged ability to make milk "thick" from the fat leaves of *Pinguicula*. This was refuted by Weisæth (1990), based both on his own experiments and 20th century tradition in his home district of Trøndelag, Central Norway. According to him, *Pinguicula* could indeed be used to make thickened milk. In his experiment, 10-15 fresh leaves of *Pinguicula* sufficed to turn one litre of sweet milk into "a fine and good, thick *tettemelk*" (Weisæth 1990:76). In Sweden, Larsson (1988) claimed to have succeeded in using a *Pinguicula*-based culture, but no details are given on the procedure; some data are provided by Alm and Larsson (1983).

Until recently, however, documentation in terms of milk characteristics,

chemistry and the bacteria involved has been weak. A recent study by Haug (1996) succeeded in producing thickened milk using *Pinguicula vulgaris*. An excellent culture was derived from plant material collected at Tromsø. And old rennet culture from Røros in Central Norway, supposedly originally from *Pinguicula vulgaris*, also yielded a satisfying product. Both these cultures contained strains of *Lactococcus lactis* subsp. *cremoris* and *Leuconostoc mesenteroides* subsp. *dextranicum*. However, plant material (*Pinguicula* leaves) from three other Norwegian sites failed to yield thickened milk. Haug (1996) suggested that the leaves had been collected too late in the season, since some ethnobotanical records cited by Høeg (1974) indicated that plants should preferably be collected early in the season, while they were growing. This is partly contradicted by the success of the Tromsø material, which was collected in late summer (August). At present, knowledge of bacteria present on *Pinguicula* leaves is limited, and it is certainly possible that only some plants house species and strains suitable for rennet. This would explain some of the past confusion as to whether *Pinguicula* works or not—and the wide range of results obtained, from complete failures to excellent cultures.

### **Comparison with the use of *Pinguicula vulgaris* in other areas**

*Pinguicula vulgaris* is widely distributed in the northern hemisphere, including Europe and the northern parts of North America, but absent in most of Asia (Hultén & Fries 1986). Despite this, it plays a much more prominent role in folk tradition in the Old than the New World. Vernacular names reflecting its fat, slimy leaves are widely distributed in Europe, e.g. in Italy, the Netherlands, and in the German-speaking countries (Brøndegaard 1951:958; Marzell 1977:762-763; Schübel 1888:185), and in much of NW Europe. Very little information on any use of *Pinguicula* species is available from North America. For *P. vulgaris*, Moerman (1998:403) only notes that the Ojibwa of Canada kept dried roots as a good luck charm. Such use is also known from Europe. In Scotland, the plant had some reputation as an apotropaic, protecting cows and milk from witches and other evil influences (Darwin 1996:128; Grigson 1955:312; Milliken & Bridgewater 2004:163-164; Vickery 1995:56).

Just as in Norway, the leaves of *P. vulgaris* have been used to cure wounds in other parts of Europe, e.g. in Germany and Great Britain; other *Pinguicula* species were used for the same purpose in Spain (Brøndegaard 1961:959; Grigson 1955:312-313).

As noted above, the main use of *P. vulgaris* in folk veterinary medicine in Norway was to treat sore teat. This cure is also known from the Great Britain (Allen & Hatfield 2004; Grigson 1955) and the Alps, where Bauhinus (1650-51) noted that herdsmen used it for the same purpose. The belief that *P. vulgaris* could cause harm to livestock, known from parts of Norway, was widespread in Sweden (Larsson 1988, map 26), and is also known from France (Brøndegaard

1951:958) and Great Britain (Grigson 1955:312). In Scotland, it was considered to make the milk of grazing cows disagreeable and stringy, and was reputed to cause disease, e.g. liver fluke infestation, in sheep (Milliken & Bridgewater 2004:66, 122, 248).

Thickened milk has been much used in Eurasia, especially in alpine areas where summer farms or transhumance prevailed (Ränk 1971). Before the advent of refrigerators and other modern technology, it was an important way of storing milk. Vernacular names and other traditions suggesting the use of *P. vulgaris* as a rennet substitute are widely distributed in Europe, especially in the NW, including Norway, Sweden (Larsson 1988), and Great Britain (Grigson 1955:312). Numerous Swedish sources mention such use, including Linnaeus (1737:10), who provided a detailed description of its use among Swedish settlers in the country's northern part. Vernacular names suggesting use in dairy products are also known from the Faroes (Brøndegaard 1971:80; Svabo 1959:156) and in Iceland (Brøndegaard 1971:80; Hjaltalin 1839; Mohr 1786; Nilsson 1988:155; Olsson 1961:118–119; Schübeler 1888:185), both areas largely settled by people of Norwegian ethnic origin. Some vernacular names recorded in Scotland, e.g. on Orkney and the Shetland islands, may derive from Norse settlers, but other Scots and Gaelic names suggest that the tradition was known to the Scots as well. *P. vulgaris* was used as rennet for cheese in Lanarkshire (Darwin 1996:128; Milliken & Bridgewater 2004:65; Vickery 1995:56). A few names of similar origin are known in the German, French and Finnish languages (Brøndegaard 1971:80; Ränk 1960:60). Marzell (1977:766) mentioned the use of *Pinguicula* as a rennet substitute from Kärnten in Austria.

In summary, numerous authors have carried out experiments with *Pinguicula vulgaris* in milk, with widely different results. Experiments and folk tradition agree that the leaves (or their proteolytic enzymes) do have some effect on milk; i.e. by making it stringy. Most laboratory (e.g. Lorás 1978; Nilsson 1950; Nilsson & Nilsson 1958; Olsen-Sopp 1912) experiments with *Pinguicula* have failed to produce thickened milk, at least of a quality suitable for food and storage, and Ränk (1960) suggested the folk use of—or belief in—*Pinguicula vulgaris* as a substitute for rennet was an example of similarity magic, based on a comparison of the viscous, thickened milk and the slimy leaves of the plant. The recent study of Haug (1996) convincingly demonstrated that *P. vulgaris* may be used to make thickened milk, but also that some *Pinguicula*-based cultures failed to do so. This may explain some of the past confusion as to whether *Pinguicula* works or not.

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## ARCHIVAL SOURCES

EBATA: my own ethnobotanical records, with year and running number (e.g. EBATA 2004:7), mostly from interviews; original material at Dept. of Botany, Tromsø Museum.

NEG (Norsk etnologisk gransking / Norwegian ethnological survey). Answers to questionnaire No. 69, on milk and milk products, distributed 1959.

NFS (Norsk folkeminnesamling / Norwegian folklore collection): (a) NFS Gade-Grøn, questionnaires on Norwegian folk medicine, distributed 1911; (b) NFS O.A. Høeg; original material of O.A. Høeg; (c) NFS Manum: answers to a 1958 query by S. Manum in "Magasinet for alle" about vernacular names and uses of *Pinguicula vulgaris*.

NOS (Norsk ordbok, seddelarkivet / Norwegian dictionary, card archive).